

Development of a 3D Flash LADAR Video Camera for Entry, Decent, and Landing, Phase II

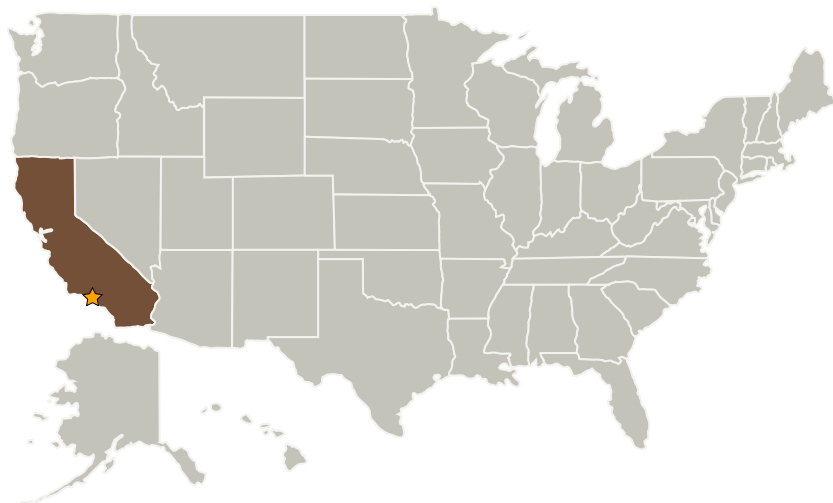
Completed Technology Project (2007 - 2009)



Project Introduction

Advanced Scientific Concepts, Inc. (ASC) has developed a 128 x 128 frame, 3D Flash LADAR video camera which produces 3-D point clouds at 30 Hz. Flash LADAR captures an entire frame of data from a single pulse of light, therefore platform motion and vibration will not affect the measurements. This is not true for any other laser-ranging system, such as scanning LIDAR. Additionally, with no moving parts, the system is smaller, lighter, and requires less power than traditional approaches. The Phase I project used an ASC camera at the JPL mars yard to gather test data. Hazard Identification, and Entry Decent and Landing applications were investigated. These data sets were taken and delivered to JPL. The analysis demonstrates that a Flash LADAR system can resolve landing hazards and is suitable as an EDL sensor. This data, together with inputs from JPL scientists, was used to develop a brassboard camera concept for NASA applications. The optimized camera will be fabricated and delivered in Phase II. This sensor will not be spaced qualified, but the Hi-Reliability module developed for phase II will be the first step. Space qualification will be the next necessary step for Flash LADAR.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Jet Propulsion Laboratory (JPL)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Jet Propulsion Laboratory(JPL)	Lead Organization	NASA Center	Pasadena, California
Advanced Scientific Concepts, Inc.	Supporting Organization	Industry	Goleta, California

Primary U.S. Work Locations

California

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX04 Robotic Systems
 - └ TX04.5 Autonomous Rendezvous and Docking
 - └ TX04.5.1 Relative Navigation Sensors